Fraction and Decimal Problem Strings

*Minilessons*, or *problem strings*, are similar to extended number talks. The term comes from *Minilessons for Operations with Fractions, Decimals, and Percents*, by Kara Louise Imm, Catherine Twomey Fosnot, and Willem Uittenbogaard, © 2007 by Catherine Twomey Fosnot, Harcourt School Publishers, [www.harcourtschool.com](http://www.harcourtschool.com)

 “*Using Minilessons to Develop Number Sense: An Example*,” a section of the book from pages 9-11, describes the process. Here is a summary:

1. Place chairs in a U-shape if possible. Every student needs to see the teacher and be able to talk easily to an elbow partner.
2. Give the problems one at a time. Discuss each one before moving to the next.
3. Students don’t have to do the problems *in* their heads, but they must do them *with* their heads! The emphasis is on the development of mental arithmetic strategies.
4. Encourage students to examine the numbers in the problem and think about clever, efficient ways to solve it. The relationships among problems in the string encourage this. “By developing a repertoire of strategies, an understanding of the big ideas underlying why they work, and a variety of ways to model the relations, students are constructing powerful toolboxes for flexible and efficient computation.”

We’ll start off with the example string from page 10. A separate handout that you will receive later has the student discussion of these problems, which is recommended reading. Strategies include doubling and halving, using a clock, eliminating the fractions, using the distributive law, and using an array model. You will have opportunities practice some of these today.

Do all the problems at your table in the spirit of characteristics 1-4 above. Work individually first to encourage a variety of methods. Then discuss with others at your table.

Work on the string to the left below first. Then, if time permits, do the one on the right (from page 74). I’ve given each problem a unique letter to aid in the discussion.

|  |  |
| --- | --- |
| 1. 9 × 30
2. 15 × 18
3. 4 ½ × 60
4. 2 ½ × 120
5. 15 × 36
6. 15 ½ × 36
7. 5 ¼ × 40
8. 0.8 × 80
 | 1. 12 × 8
2. 24 × 4
3. 48 × 2
4. 0.12 × 0.8
5. 0.24 × 0.4
6. 0.48 × 0.02
7. 4.8 × 0.20
8. 5.2 × 0.02
9. 1.8 × 60
10. 9 × 12
11. 4.5 × 24
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